A Race to Lower Standards? Labor Standards and Location Choice of Outward FDI from the BRIC Countries

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Abstract

Scholars argue that multinational corporations tend to locate their investment in countries with lower labor standards, but empirical results are highly inconsistent. In this paper, we investigate the effect of differential labor standards on the location choice of outward greenfield foreign direct investment (FDI) from Brazil, Russia, India and China (i.e., the BRIC countries). We find robust evidence that while there is a tendency towards the attraction of FDI by lower labor standards in developed countries, such a "race" is absent in FDI directed to developing countries. Location choice is highly path dependent upon previous trading relations between the home and the host country, which hampers the MNCs' ability to arbitrage. Conversely, capital mobility at the industry level is found to intensify the race to lower standards.

Key words: Labor standards, BRIC countries, Greenfield foreign direct investment.

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1. Introduction

In the debate on whether globalization has gone too far (Rodrik, 1997), a central concern of policy-makers as well as researchers is that multinational corporations (MNCs) may relocate jobs from high to low standard countries, forcing a competitive downward spiral of labor standards. This is how the thesis of a "race to the bottom" (RTB) was originated in which such a race by corporations was criticized as a race "*not of diligent but of laxity*" (Liggatt, V. Lee, 1933). It is featured strongly in the heated debate among politicians and academics in the era of unprecedented movement of capital (OECD, 2001; Meardi, 2006; Hansen, 2012) and the prevailing trend towards increased labor market flexibility across the globe (Standing, 1997; UNCTAD, 2003; UNCTAD, 2009; Siebert, 2006).

This paper investigates whether there is a causal linkage between labor standards and location choice of outward Greenfield FDI from Brazil, Russia, Indian and China -- the BRIC countries. Therefore, we investigate whether MNCs "race" to lower standards in their location choice. The question of whether there are inter-state strategic interactions with respect to their labor standards is beyond this paper. We contribute to the literature in a number of ways. Theoretically, we probe the impact of labor market regulations not only from the production cost but also the transaction cost perspective, providing a new understanding of the impact of labor regulations on FDI. We also consider that potential host countries differ significantly with respect to their economic, social and cultural features (Krugman, 1994). Their significant institutional differences may lead to the presence of multiple equilibriums in which the effect of labor standards on FDI varies, a possibility not considered in previous studies. Third, we incorporate the insights from the behavioural approach, which interprets the internationalization of firms as an incremental learning process (Johanson & Vahlne, 1977; Ericsson, et al., 2000). As an important force

influencing the decision making of MNCs, this can interact with the tendency of seeking lower standards. Conversely, we suggest that industry mobility, as an *exogenous* factor that is innate to the production and distribution process of an industry, can significantly alter MNCs' liberty in choosing countries with lower labor standards over those with higher standards. Our theoretical framework therefore provides us with a richer understanding of the complex relationship between host labor market regulations and MNEs' location choice.

Empirically, we adopt a mixed logistic regression method that considers both country characteristics and firm attributes to estimate the relationship between labor standards and location choice. We also use a novel firm level dataset of the Greenfield FDI undertaken by firms from Brazil, Russia, India and China. To our knowledge, this is the first study examining the relationship between BRIC FDI and labor market regulations. BRIC countries have a share of 46.3% of global GDP growth in our study period, and together, they are poised to dominate the global economy later this century the way Europe and the United States once did. Their outward FDI has outpaced that from the world in recent years (UNCTAD, 2010). As their influence on the global economy grows, so do the risks for the sustainable world development, such as to what extent the rights of labor can be balanced against the rights of capital.

Although the BRIC countries exhibit considerable variations with respect to their forms of government, political histories, economic systems and growth, their relevance for our research is that they all exhibit weak labor protection compared to more established economies due to combined forces such as increasing competition exposed by globalization, abundant labor supply, and their comparative advantage in relatively labor intensive industries (Arbache and Menezes-Filho, 2000; Desai and Idson, 2000; Frankel & Kuruvilla, 2002). Capitalizing on the flexible labor market in their home countries unattainable to their Western counterparts, BRIC MNCs may find it challenging to adjust their expectations and practices in host countries with more stringent labor protections (CNN International, 2007; ELRiS, 2009; Alvarez, 2010). The main contribution of our paper is in presenting an analytical framework to

understand firm level factors that either hinder or heighten firms' arbitrage behaviour by incorporating insights from different theoretical traditions.

Our findings can be summarized as follows. First, we find that the tendency to locate FDI in countries with lower standards is present only in developed countries but not in developing countries, demonstrating multiple equilibriums driven by significant institutional differences across countries. Second, previous trading relations between the home and the host country substantially reduce the tendency of seeking lower standards, indicating that location choice is highly path dependent. Third, we use two different industry mobility indicators, and find that higher mobility significantly intensifies the race to the bottom, suggesting that lower relocation cost facilitates MNCs to engage in fiercer inter-jurisdictional arbitrage to maximize global efficiency. The remainder of the paper is organized as follows. In Section two, we outline the literature background of our study. We develop our hypotheses in Section three. We explain our empirical strategy in Section four. In Section five, empirical results are presented. Section six discusses the results and concludes the paper with some managerial and policy implications.

2. Literature review

A frequent critique of globalization is that it can lead to a race to the bottom. More specifically, the race to the bottom hypothesis hinges on two important propositions. First, political scientists argue that states engage in policy competition to attract taxpayers, industry and other mobile units, such as FDI, that benefit state economies (e.g. Berry, Fording, & Hanson, 2003; Woods, 2006; Konisky, 2007). Second, economists suggest that MNCs may seek to increase their profits by investing in countries with less restrictive standards (Wolfgang and Levinson, 2002; Javorcik, and Spatareanu, 2005; Gorg, 2005; Drezner, 2006). While these are common concerns associated with globalization, empirical evidence from both disciplines remains inconclusive and insufficient, and studies on the relationship between FDI and

labor market regulations remain particularly limited (Javorcik and Spatareanu, 2005: 375; Bellak & Leibrecht, 2011: 1726).

The current study does not tackle the first proposition of whether there are inter-state strategic interactions regarding how countries set up and adjust their labor standards in response to other countries' decision. Instead, we address the second proposition, namely, whether MNCs choose where to invest based in part on the labor market regulations of potential host countries. Apart from potential welfare implications of the question, there are good reasons to study the impact of regulations on FDI in the International Business (IB) context. In contrast to the proliferating attention to the normative and cultural-cognitive institutions (e.g. Kostova and Zaheer, 1999; Xu and Shenkar, 2002; Gellbuda, et al., 2008), the impact of regulatory institutions on FDI remains under-explored. But regulatory standards are a very important component of the formal institutions of a country (North, 1990; Scott, 1995). Regulatory institutions are explicitly codified in the forms of laws, rules and legislations (Streeck and Schmitter, 1985; Williamson, 1991) that can be easily interpreted, planned and strategically manipulated by corporations.

For the purpose of the study, we define labor standards as legal and regulatory restrictions on the *non-wage* component of employment conditions (Ghose, 2003). Labor standards concern issues such as freedom from forced labor and discrimination, freedom of association and protection of the right to organize collective bargaining, equal remuneration, abolition of child labor and minimum wage. Rising standards for all the working people is regarded as being synonymous with development (Singh and Zammit, 2000). From the standpoint of the neoclassical theory of the firm, there is a strong consensus on the dampening effect of higher labor standards on market entries of MNCs (Lafontaine and Sivadasa, 2009). Higher labor standards adversely affect operational flexibility of MNCs. For instance, while strict hiring rules restrict temporary work agencies and the use of fixed-term contracts, tight firing rules make it difficult and costly for employers to lay off workers. Anticipating such constraints, foreign MNCs as well as domestic firms become reluctant to invest, which can then lead to chronic unemployment (Feldmann,

2009; Stel et al., 2007; World Bank, 2004a, 2004b). Higher labor standards also require employers to provide employment protection and other welfare benefits, which directly cut down profit margin (Javorcik and Spatareanu, 2005).

Despite the compelling theoretical view and widely expressed concerns among business owners, empirical studies are hardly conclusive. This is all the more remarkable since a number of studies employed the same dataset from surveys administrated by the Bureau of Economic Analysis (BEA) of the US Department of Commerce. Some studies find that more stringent labor standards deter US FDI (Cooke, 1997; Cooke and Noble, 1998); others do not (Traxler and Woitech, 2000). Bognanno et al (2005) instead find mixed results depending on how labor standards are measured. Instead of analyzing the relationship between labor standards and FDI entries, Lafontaine and Sivadasam (2009) find that strict rules of hiring and firing *delay* the entry and reduce the number of outlets of an anonymous US fast food chains in 48 countries in the period of 2000 and 2003. Research based on data out of US FDI delivers equally mixed results. Kucera (2002) find no evidence that MNCs favour countries with lower standards. By contrast, Ham and Kleiner (2007) find that FDI flows into OECD countries between 1985 and 2000 were negatively associated with the rigidities of labor regulations. Supporting evidence is also found in Javorcik and Spatareanu (2005) and Gorg (2005) using European data.

3. Integrating other theoretical perspectives: hypotheses development

A few common traits shared by previous studies have motivated our research. First, most of them have focused on FDI from developed economies. But with the accelerated globalization, developing countries are now an indispensable part of the global economy. The behaviour of FDI from developing countries is receiving increasing attention, with particular interest in the case of China (e.g. Buckley, et al., 2007; Duanmu, 2012; Kolstad and Wiig, 2012; De Beule and Duanmu, 2012; Li and Liang; 2012; Wang, et al.,

2012). But no studies have investigated how developing country firms respond to labor market conditions home or abroad (Sanyal and Menon, 2005: 825). Second, previous studies have employed narrowly defined indicators of labor standards, missing the complexities of labor market regulations across countries. Third, with the only exception of Lafontaine and Sivadasan (2009) which uses a single multinational's data, all other studies use aggregate data, which is unable to have direct examination of, and control for, firm level characteristics in estimation. We aim to address these empirical weaknesses using firm level information.

From a theoretical point of view, previous studies fail to consider, at the firm level, some important factors that may hinder or heighten MNCs' incentive to arbitrage. One of the factors, we argue, is that MNCs may have different mobility due to *exogenous* industry characteristics that are innate to the production and distribution processes of different industries. This has been acknowledged in previous work but has never been systematically examined. We are the first to measure mobility systematically across industries. Conversely, behavioural theories of internationalization (Johnson & Vahlne, 1977; Ericsson, et al., 2000) suggest that previous trading relations of MNCs may create an *endogenous* path dependency on their subsequent internationalization, therefore mitigate the tendency of choosing locations solely based on the level of labor regulations as suggested by the more traditional neoclassical approach. We also consider that the competition for capital among nation states in inherently asymmetrical. This is because nation states have to respond to external competition as well as internal forces, such as voter's preference, deep-seated ideologies among their population, and nations' institutional environment. This makes the competition for capital pertinent only among groups of countries with salient similarities, leading to multiple equilibriums. We proceed to develop our specific hypotheses.

International regulatory studies suggest that when the potential host country's regulative institutions make doing business across borders more costly, it will lose out in the inter-state competition because mobile

capital will locate investment to countries with lower standards (Chisik and Davies, 2004; Basinger and Hallerberg, 2004; Dewit et al., 2007). This argument is the central theoretical prediction shared by previous empirical investigations on the impact of labor market regulations on FDI, as well as other regulations such as corporate tax and environmental standards. The negative impact of stringent labor regulations on FDI, however, has two distinct sources. The first is purely production cost implication in the sense that when corporations are required to provide better welfare to workers, such as minimum wage, safe working environment, holiday entitlement, and pension plans, it will directly cut down profit margin, making the country less attractive than its peers with less stringent regulations (Javorcik and Spatareanu, 2005; Lafontaine and Sivadasam, 2009). The cost implication of stringent labor regulations on FDI is no different from the impact of other regulations, such higher corporate tax (e.g. Haufler and Wooton, 1999).

However, overly stringent labor regulations can discourage capital not just because of increased production cost, but also because of increased transaction costs resulting from "uncertainty" for capital (Bentolila and Bertola, 1990). As demand changes and technology progresses, some investments prove to be more successful than others. The implication of stringent labor protection under uncertain environment is twofold (Haaland, Wooton and Faggio, 2003; Haaland and Wooton, 2007). One is that it will raise adjustment cost because MNCs cannot align their labor demand according to fluctuated market without incurring substantial cost. Two is that it will raise exit costs because of high severance payment (an important form of labor protection) in the event of investment failure. With the presence of stringent labor protections as part of regulatory framework of a country, the negative consequences of market uncertainty will fall largely on capital (the employer) in order to minimize the cost to labor. This extra transaction costs that employers have to bear is the second source of negative impact of stringent labor regulations on FDI.

The transaction cost implications of labor regulations have profound but unrecognized link to the theory of the firm. The key tenet of this theory is that FDI, as an equity based entry mode that entails substantial managerial control, will only arise when the transaction cost is lower within the firm's boundary compared to that in the marketplace (Dunning, 1971; Buckley and Casson, 2009). This is informed by classical transaction cost theory (TCE), advocating that the essence of the firm is to use labor market contract to replace product market contract when the transaction cost of the latter is higher than the former (Coase, 1937; Yang and Ng, 1995). While nearly all studies adopting TCE in IB area focus on the variation of transaction costs in the market that subsequently explain when the hierarchy should replace the market as the optimal governance form (e.g. Buckley and Casson, 1976; Hennart, 2009; Brouthers, 2012), none approaches the question from labor market perspective that can explain under what circumstances that the hierarchy based on employment contract becomes too costly, therefore should be replaced by market-based transactions such as international sub-contracting. This is what makes the linkage between labor market regulations and FDI different from other regulations, such as corporate tax.

The advantage of this theoretical reasoning is that it directly compares the hierarchy and the market under a unified *contractual* theoretical lens to understand which contractual arrangement is superior to the other. The prediction based on this theoretical lens does not rely on production cost implications that are critical for regulatory studies, but merely variations of transaction cost between employers and workers under uncertain environment would suffice a theoretical prediction. It also demonstrates how a country's regulatory institutions can transform into variations of transaction cost at micro firm level which subsequently influences firm decisions. The linkage between macro institutions and firm transaction cost is ascertained by North (1990) that transaction cost theory should be understood in specific institutional context because institutions provide the *structure* in which contractual arrangement is made. Therefore, we argue, *all else equal*, because stringent labor market regulations tend to accelerate transaction costs of the hierarchy, FDI will be replaced by product market contracts, such as international sub-contracting. Conversely, when countries have poor labor protections, they may attract larger amount of FDI because

the regulatory environment makes it easier for the capital (MNCs) to shift the cost of uncertainty to employees. Although we cannot observe the substitution between FDI and other forms of internationalization which requires us to directly observe alternative options simultaneously, what we can infer is suppressed FDI resulting from more stringent labor regulations. We take the logic of production cost and transaction cost implications together and suggest our first hypothesis as follows:

H1: All else equal, higher labor standards have a negative effect on the likelihood of the location chosen by BRIC MNCs.

An important assumption of the RTB thesis is that international markets for capital are the conduit for policy independence between countries. Economists have stressed that capital and trade respond positively to signals that policy liberation sends (Besley, 1995; Bartolini and Drazen, 1997; Wilson, 1999). However, Krugman (1994) argues that countries differ significantly from each other, which may render multiple equilibriums in terms of competition for capital. Political scientists find evidence that jurisdictional competition only takes a strong form among countries with relatively homogenous characteristics, such as their economic growth and geographic approximation (Simmons and Elkins, 2004). Multiple equilibriums can also result from countries' historical pathologies so that politicians cannot easily break with prevailing traditions for their policy setting (Brueckner, 2003), or countries' economic status where nation states of comparable economic size and development tend to compete with each other for scarce resources (Kanbur and Keen, 1993). This argument concurs with institutional perspective that institutions define the "rules of games" and include laws, regulations, and cultures of the country (Davis, Desai, & Francis, 2000; North, 1990). Different cultural norms in relation to solidarity, equality and the role of the welfare state versus the market therefore give arise to divergence of government welfare policy making, such as those related to labor market regulations (Esping-Andersen, 1999). More specifically, labor economists point out that there is fundamental difference of the working of labor market between developed and developing countries. In contrast to wage labor market and state welfare provisions in developed economies despite variations across them, labor market in developing

countries is far more segmented with a large informal sector, prevailing short-term employment arrangement, and a lack of social protections (Solow, 1990; Fields, 2011). The stark and persistent difference means the benefit of arbitraging across the two groups of countries varies significantly, leading to multiple equilibriums.

It is noted that we do not investigate whether nation states engage in strategic standard setting, but seek to theoretically differentiate countries to examine whether BRIC FDI responds to labor standards in different ways. We suggest a differentiation can be made between developed and developing countries due to their significant economic and institutional difference such as standard of living, industrial development, political and economic governance (e.g. North, 1990; Scott, 1995; Meyer, 2001; Asiedu, 2002). We advocate that the negative effect of higher labor standards may be stronger in developed countries for several reasons. First, there is more similarity within developed countries in terms of their economic and institutional environment, which makes it more likely that they can replace each other as desired investment locations. Second, the business environment in developed economies usually is more regulated and implementations of regulations are more effective. This means that the regulatory compliance cost would be higher, generating larger benefit for arbitrage. In addition, more stringent regulations introduce higher information asymmetry for foreign firms, especially BRIC firms because of different home institutional environment, placing them at a more disadvantaged position in comparison to domestic firms (Mezias, 2002). Therefore, higher labor standards in developed countries would be particularly detrimental to BRIC FDI.

This tendency can be disrupted in developing countries by a few countervailing forces. First, the overall labor standards of developing countries are largely on a par with those of BRIC countries. Seeking even lower standards may be theoretically possible, but the marginal benefit could be small. Being the largest developing countries themselves, their home markets provide ample space for firms to seek efficiency driven growth. Second, legal enforcement of labor market regulation is generally weak in developing

countries, reducing MNCs' incentive to arbitrage. Third, BRIC FDI could be particularly welcome by developing world because of their emerging status in the world economy as well as perceived compatibility of their investment for the economic and social conditions in developing countries (Ma and Assche, 2011). Institutional similarity between developing host countries and BRICs can give BRIC MNCs initial advantages because they can utilize their experience accumulated at home (Cuervo-Cazurra and Genc, 2008: 975), which can mitigate the tendency of seeking lower labor standards. Therefore, we propose our second hypothesis:

H2: all else equal, the negative effect of higher labor standards on the likelihood of the location chosen by BRIC MNCs is higher in developed countries compared to that in developing countries.

Another underlying assumption of RTB is that capital has high mobility. Indeed capital is the most mobile factor of production, but mobility is hardly uniform across industries with different production and distribution processes. For example, mobility may be hampered by the extent to which the operation relies on *complementary* input bounded by locations, such as unique natural resource. Scholars have found that higher reliance on location bound natural resource, such as agriculture products and oil extraction, reduce MNCs' ability to arbitrage on host country's environmental standards (Ederington et al., 2005; Cole et al., 2010). We suggest that this logic should also apply for labor standards. One of the reasons that this has not been considered in previous studies is due to the empirical challenge of ranking industries by their mobility level. In fact, previous research that did consider this only compared manufacturing with service sectors, assuming that service sectors have higher mobility (Ederington et al., 2005). But categorical variables like this have serious limitations. Apart from relatively higher mobility, service sectors may be more responsive to higher labor standards because of higher proportion of labor costs in their total operation cost. Second, service sectors can be argued with lower, not higher, mobility because of their contemporaneous nature of provision and consumption. In this research, we contribute to the literature by replicating the methodology developed by Farness (1968) to test the idea of mobility more systematically. We will return to this in methodology section. The hypothesis we like to propose is:

H3: all else equal, higher mobility intensities the negative effect of higher labor standards on the likelihood of the location chosen by BRIC MNCs.

Last but not least, we investigate the effect of path dependence on MNC's ability to arbitrage. Both political scientists and economists that are interested in RTB thesis have assumed implicitly that the location decision of MNCs is *ahistorical* in part due to the use of aggregate data. But one of the key theoretical frameworks in IB area, the behavioural approach of internationalization, interprets that the internationalization of firm as an incremental learning process (e.g. Johanson and Vahlne, 1977; Ericsson, Johanson, Makgard, & Sharma, 2000; Casillas, Moreno, & Acedo, 2012). We argue that this approach has important insights to offer to regulatory studies. As expressed by Forsgren and Johanson (1992: 10): "International expansion is inhibited by the lack of knowledge about markets and such knowledge can mainly be acquired through experience from practical operations abroad." Some IB research explicitly model the sequential nature of FDI entries, indicating strong path dependency attached to internationalization decisions (e.g. Chang, 1995; Gao and Pan, 2010).

We argue that path dependency embodied in prior trading relations will affect BRIC MNCs' location choice. Past research finds that the geographical expansions of FDI from China and India is highly dependent upon the export relations between them and the host country, as previous export cumulates experience and knowledge of the institutional environment and consumer taste in the destinations (Duanmu and Guney, 2009). The global expansion of Taiwanese MNC is found to be characterized by strong path dependency, through which they develop organizational capabilities based on their prior subcontracting manufacturing (Chu, 2009). FDI decisions subsequent to prior exporting experience are also introduced as an important evolutionary pathway of US MNCs overseas expansion (Vernon, 1979; Bevan et al., 2004; Fedderke and Romn, 2006). The evidence from these studies reflect that internationalization process from export to FDI as a process through which a firm increases its degree of

commitment to foreign markets and their level of knowledge about those markets (Welch and Luostarinen, 1988).

This influence can reduce the tendency that MNCs choose location purely based on the difference of labor regulations. In other words, location decisions exhibit some level of organizational "inertia" (Hannan and Freeman, 1984): MNCs may become attached to cognitive styles, behavioural dispositions and decision heuristics associated with their prior export experience. Path dependence argument recognizes that "history" matters, that is, a firm's previous internationalization experience and its repertoire of routines constrain its future behavior (Teece et al., 1997: 522–523). Largely neglected in previous aggregate based studies, we suggest that prior exporting experience of BRIC countries will mitigate BRIC MNCs' tendency of seeking lower labor standard countries in their location choice. Therefore, we suggest the following hypothesis:

H4: all else equal, prior exporting relations between BRIC countries and the host country will mitigate the negative effect of higher labor standards on the likelihood of the location chosen by BRIC MNCs.

4. Research method and data

4.1 *Research method*

The location decisions of FDI have been estimated with conditional logistic regressions (CLR) in recent literature (e.g. Alcacer and Chung, 2007). But CLR is more applicable when there are a small number of options and there is limited independence among available options. This is because the estimations of CLR imply independence from irrelevant alternatives (IIA), which assumes that the strength of preference for location A over location B does not depend on other options available (Revelt and Train, 1998). But this is hard to hold because behavioural decisions usually reflect trade-offs among multiple competing demands for the firm. Therefore changes in available options may alter individual firm's preference,

thereby violating the IIA assumption. In addition, CLR, being fixed effects estimates, also assumes that the strength of selection is homogenous among individual firms. Therefore, it only estimates the population *average* selection pattern, omitting possible heterogeneity across firms or industries. To address these concerns, we adopt mixed conditional logistic regressions (MCLR). The advantages of MCLR are two-fold. First, it is better suited when selection for the different location attributes potentially vary among individual firms. This will allow us to estimate the effect of industry mobility and path dependency, and control the effect of other firm characteristics on their location choice. Second, MCLR is free from the rigid assumption of IIA. Therefore, it allows more flexible estimation based on random utility theory (Cooper and Millspaugh, 1999). The model was substantially developed by Train (2003) and applied by Basile et al (2008), which has a similar setting with our study.

Following this, we let $n=1, \ldots, K$ representing the individual firms, and $j=1, \ldots, J$ the available locations. MCLR considers utilities as random variables, with U_{nj} being the utility that firm n assigns to the j_{th} location available. Let $x_{nj1}, \ldots, x_{njm}$ represent the values of m covariates (e.g. GDP) measured at the j_{th} location available to firm n. Now let us assume that the utility assigned to a location depends on its attributes, *viz*.

$$U_{nj} = \beta_1 x_{nj1} + \beta_2 x_{nj2} + \cdots + \beta_m x_{njm} + b_{n1} z_{nj1} + \cdots + b_{nq} z_{njq} + \varepsilon_{nj} = \mathbf{x}_{nj}^{'}\boldsymbol{\beta} + \mathbf{z}_{nj}^{'}\mathbf{b} + \varepsilon_{nj} \qquad \text{eqn 1}$$

where $\beta_1, \ldots, \beta_m$ are the fixed regression coefficients, $b_{n1}, \ldots, b_{nq}$ are firm level random effects with q being firm level covariates, $z_{nj1}, \ldots, z_{njq}$ are fixed values specifying the structure of the random effects (usually equal to the subset of the covariates x_{nji} for which coefficients are random), ε_{nj} are independent and identically distributed random error terms, $\boldsymbol{\beta} = (\beta_1, \ldots, \beta_m)'$, $\mathbf{x}_{nj} = (x_{\text{nj1}}, \ldots, x_{\text{njm}})'$, $\mathbf{b} = (b_{n1}, \ldots, b_{nq})'$ and $\mathbf{z}_{nj} = (z_{nj1}, \ldots, z_{njq})'$. We make the assumption that the random errors follow an extreme value distribution. This assumption is mild and the model thereby specified is very flexible (McFadden & Train 2000). Let the random effects $\mathbf{b}$ be independent and identically distributed (i.i.d) with density $f(\mathbf{b};\boldsymbol{\theta})$, where $\boldsymbol{\theta}$ is a

vector of unknown parameters. The probability that a firm chooses location *j* within the set of *J* locations is

$$P(\mathbf{x}_{nj}) = \int \frac{\exp\left(\mathbf{x}'_{nj}\boldsymbol{\beta} + \mathbf{z}'_{nj}\mathbf{b}\right)}{\sum_{i=1}^{J}\exp\left(\mathbf{x}'_{nj}\boldsymbol{\beta} + \mathbf{z}'_{nj}\mathbf{b}\right)} f(\mathbf{b};\boldsymbol{\theta})\mathrm{d}\mathbf{b} \qquad \text{eqn 2}$$

Based on eqns (1) and (2), we assume that the location chosen by firm *n* among the *J* available locations is assigned label *j*=1 (and thus the location not chosen are assigned labels *j*=2,3, …, *J*). Maximum-likelihood estimates and random effects distribution parameters are obtained by finding the values of $\boldsymbol{\beta}$ and $\boldsymbol{\theta}$ maximizing:

$$L(\beta,\theta) = \prod_{n=1}^{K}\int \frac{\exp\left(\mathbf{x}'_{nj}\boldsymbol{\beta} + \mathbf{z}'_{n1}\mathbf{b}\right)}{\sum_{i=1}^{J}\exp\left(\mathbf{x}'_{nj}\boldsymbol{\beta} + \mathbf{z}'_{nj}\mathbf{b}\right)} f(\mathbf{b};\boldsymbol{\theta})\mathrm{d}\mathbf{b} \qquad \text{eqn 3}$$

4.2 Research data

We use data of Greenfield FDI undertaken by firms from BRIC countries between 2003 and 2010 to estimate the expected relationship. Outward FDI from BRIC countries accounted for over 50% of total outward FDI from developing and emerging markets (UNCTAD, 2010). Compared to data of foreign mergers and acquisitions (M&A), Greenfield FDI data is argued to be most suitable to study the relationship between the location choice of MNCs and host country's regulatory environment (Tole and Koop, 2010). Our data contains 5057 creations and expansions of foreign affiliates by BRIC MNCs across 156 countries over the period of 2003-2010. We remove 354 'expansions' from our data to focus solely on new creations. The data was provided by fDi Markets – a data service branch of the Financial Times.

4.2.1 Labor standards and other key dependent variables

As a measure of labour standards, we use first of all a composite indicator developed by Botero et al (2004). The regulations of labor markets are investigated through employment laws, collective relations

laws, and social security laws in 85 countries. They reflect the encompassing legal and political influence on labor related 'laws on books' and have been adopted in recent study such as Lafontaine and Sivadasan (2009). We use the average score of the three indicators as a composite proxy called employment protection laws in our estimates. Secondly, we use the Freedom of Association and Collective Bargaining (FACB) right violation index developed by Kucera (2004), which largely captures practical problems associated with the protection of labor rights and has been adopted in studies such as Neumayer and Soysa (2006). The indexes from these two sources complement each other since they reflect *de jure* and *de facto* aspects of labor standards. Thirdly, we measure labor standards by hiring and firing rigidity index and wage determination rigidity index which are developed by Global Competitiveness Report by World Economic Forum. They are built upon questionnaire survey with corporate executives who have extensive experience in doing business across countries. The indexes largely reflect on their views of the actual operations of labor standards across countries, which are also the most widely used indicators in previous studies (e.g. Javorcik and Spatareanu, 2005; Gorg, 2005; Lafontaine and Sivadasam, 2009; etc). We measure all indicators in a way that higher values indicating higher standards. Therefore, we expect negative coefficients to support our hypotheses.

We explain other key independent variables. We differentiate countries by developed versus developing countries using income data from the World Bank. Industry mobility is measured in two different ways. We first follow UNCTAD (2010) in grouping FDI into primary, manufacturing and service sectors, which is similar to, but improves upon Ederington et al (2005) and Cole et al (2010). In this categorization, agricultural production/processing and other natural resource intensive sectors, such as mineral and gas exploration, are under a single umbrella of the primary sector. The rest is divided into manufacturing and service sectors. A second and more systematic way to measure mobility is based on Farness (1968). The assumption of this method is that within a nation, if a region were to produce twenty percent of the national output, it would tend to claim twenty percent of all geographic markets. Quite obviously, no industry is perfectly mobile, hence none will confirm to the pattern predicted by the hypothesis of perfect

mobility. However, the degree of conformity will vary considerably among industries. We replicate this method by using the origin and destination of output by census district for three-digit industries access from Commodity Flow Survey (CFS) administrated by the US economic Census in 2006. The degree of conformity is measured by a Chi square test with the results made comparable by correction for degrees of freedom. We then rank all industries in CFS and match this data with the industry information in our dataset to allocate each of them with a specific ranking value. It is noted that we only rank manufacturing and primary sectors where such data are available; service sector is therefore dropped from this ranking index. Appendix 1 lists all the industries in our data and their respective mobility rank based on this methodology. We then create interaction variables by this mobility index and labor standard indicators to test the third hypothesis. Path dependency is indicated by tracing the prior exporting relationship between BRIC countries and the host country to assess whether FDI locations decisions follow prior trading trajectories. The data was drawn from UN Comtrade database. Similarly, we create interaction terms by this variable and various labor standards to test the final hypothesis.

4.2.2 Control variables

Our country level control variables are as follows. We indicate host country's economic size by its GDP (Chakrabarti 2001). We consider unemployment rate and compensation of the host country as labor related controls (e.g. Basile et al 2008). Corporate tax is included because it is argued to be a negative estimator for MNCs' activities (Dunning, 2006; Zodrow, 2010). We adopt political risk developed by the consultant company PRS group, following previous studies on FDI from emerging markets (Buckley, et al., 2007; Duanmu and Guney, 2009). Rule of law is another institutional control variable, which captures the quality of contract enforcement, property rights, the police and the courts in a country. Bilateral Investment Treaties (BITs) are rarely studied in FDI literature, but its importance to developing countries lies in the fact that BITs may compensate under-developed institutional environment to help promote FDI flows. We have economic openness in the model to take into account that an economically open regime

usually gives investors more confidence. It is measured by the ratio of sum of export and importance to a country's GDP. Geographic distance is our final country level control.

The following are firm level control variables. First, we control the R&D intensity by using a dummy indicating whether or not the MNC is an R&D oriented enterprise (Delios and Beamish, 2001). R&D intensive firms may be systematically more discouraged by higher labor standards, such as employment protection, because they face more uncertainty about future development and hence value flexibility more. Second is the size of MNCs, measured by the natural log of MNC parent global turnover (Luo, et al., 2009). Large MNCs have lower marginal costs due to economies of scale. This could reduce their sensitivity to higher labor standards. However, a counter argument is that large MNCs usually have presence in multiple locations; such portfolio gives it a better ability to counter the risk or costs of a single location. Therefore its net effect can be ambiguous. The measurement of our variables, data source, and descriptive statistics are presented in Table 1. The correlation matrix of key variables is presented in Table 2.

5. Empirical results

Table 3 reports our results regarding our baseline hypothesis. We find that all four labor market standard indicators receive negative and statistically significant results. This lends strong support to our first hypothesis. Then in Table 4 we split developed countries from developing ones. On the left side of the table, we have four models reporting the results of developed countries. We find that, apart from the fact that all four labor standard indicators received expected results, all coefficients that they receive are much larger than those in Table 3. This indicates a stronger race to lower standards. In stark contrast, on the right side of the table, the four labor market indicators attain different results in developing country sample. While wage determination rigidity turns to be a statistically significant and positive estimator, the other three labor standard indicators become statistically insignificant. This suggests that the race to lower

standards tendency is completely absent. Taking these results and those in Table 3, we suggest that the results in Table 3 were probably driven by developed countries. We speculate that the reason of rigid wage determination setting becomes an attractive factor in model 4 of developing country sample is because it will reduce transaction cost involved when BRIC MNCs set up new operations in the host country (e.g., by reducing decentralized bargaining with individual employees, different labor organizations, and probably local governments). This arguably limits MNC's ability to reduce wage cost because of the centralized wage structure. But in countries where wage costs are relatively low, it is possible that the saved *transaction costs* may exceed the increased labor cost that could arise from more decentralized wage setting, and thus, making rigid wage structure an operational advantage for MNCs. Taking the results across the four models collectively, our second hypothesis is supported. The race to lower standards is only relevant in the context of developed countries, where not only labor cost is higher, but also its non-wage standards, which makes it important for BRIC MNCs to arbitrage in order to achieve maximum efficiency. Such tendency is absent in developing countries.

Table 5 reports the results differentiating three different industries as a rough classification of mobility. We find interesting results in service sector, where all our four labor standard indicators receive statistically significant and negative results. This indicates a strong race to the lower standards in the location decision of BRIC FDI. In contrast, in both primary and manufacturing sectors, none of these proxies receive statistically significant results. This lends us preliminary evidence that, assuming service sector has the highest mobility, the race to lower standards is only present in this sector owing to its high mobility. We use a more systematic measure of capital mobility to test this hypothesis in Table 6. As shown in Model 1, the variable of mobility is a statistically significant and positive estimator, suggesting that the probability of undertaking FDI is higher in more mobile industries. This result is consistent across all models. The interaction variable of mobility and employment protection laws is a statistically significant and negative estimator. This indicates that industries with higher motilities engage in fiercer race to lower standards. Similarly, in Model 2, we use FACB rights and its interaction term with mobility.

The result is highly consistent. The interaction term is a statistically significant and negative estimator, suggesting that the magnitude is intensified in industries with higher capital mobility. We continue to receive support in Model 3 and Model 4, where the interaction terms of mobility and other two labor standards indicators also attain expected results, confirming our hypothesis that capability mobility is a major catalyst intensifying MNC's race to the lower labor standards.

Finally, we move to Table 7, where we test to what extent path dependency, as indicated by prior export relations between the host and the home country, impedes MNCs from inter-jurisdictional arbitrage. The four interaction variables between path dependency and four labor standards indicators all receive expected results, though their coefficients are modest. Considering the fact that path dependency itself is a statistically significant and positive estimator in all models, we interpret our results as that prior export relationship substantially reduces the tendency for MNCs' to seek lower standards in their location choice.

6. Discussions and concluding remarks

Our investigation has made three main findings. First, there is an overall tendency for BRIC MNCs to locate their Greenfield FDI in countries with lower labor standards when we do not differentiate developed from developing countries. But when we do, we find that this tendency is stronger in the former, but absent in the latter. This indicates the existence of multiple equilibriums where the effect of labor standards on the location decision of BRIC FDI varies across different institutional contexts. Our results are robust to including important control variables, such as labor compensation and unemployment rate. We do not eliminate alternative interpretations such as BRIC FDI may be deterred by high corporate social responsibility or lefty ideology which can associate with higher labor standards, but the possibility that these alternative indicators completely correlate with labor standards and BRIC FDI coincidently shares a same ideological stance in their FDI location decision is low. However, these alterative

explanations may be investigated further in future studies. More importantly, we find evidence that suggests that the race to lower standards interacts with factors, such as capital mobility and path dependency. While higher capital mobility triggers fiercer arbitrage by BRIC MNCs to maximum corporate efficiency, prior export relations between the home and host countries substantially reduce MNC's ability to arbitrage. Although our study has limited comparability with previous research because of differences in data, methodology, and labor market indicators, we are more aligned with those supporting the argument that MNCs do arbitrage, since those studies focus mainly on developed countries as the hosting states (e.g. Cook, 1997; Cook & Nobel, 1998; Ham and Kleiner, 2007; Javorcik and Spatareanu, 2005; Gorg, 2005). What is more interesting is that we uncover a few factors that attenuate the race, thereby providing some if not full explanation of why some studies have generated mixed results (e.g. Bognamo et al., 2005).

Our findings suggest that MNCs do not race to the *absolute* bottom in their location choice, but the threat for developed countries to lose FDI from emerging markets to their peers with lower labor standards is present. While emerging market FDI represents a new source of global capital flows, the delicacy for developed countries governments is how to weigh the benefits and costs of attracting such FDI by adjusting their labor regulatory standards. By contrast, there might be little benefit for developing countries to lower their labor standard to attract emerging market FDI. Our analysis only focuses on MNCs' response to host countries with varying labor standards; therefore, we do not provide evidence with respect to whether or not host states strategically manipulate their labor standards in order to attract more FDI. However, even in a static setting, so long as inter-country differences of labor standards exist, MNCs will arbitrage. Our finding in developed countries strongly supports this central hypothesis.

Our empirical analysis suggests that it is better to separate developed countries from developing ones when studying the locational determinants of BRIC FDI as many important factors appear to have opposing effect, such as corporate tax and labor compensation. Similar views were advocated in Blonigen

(2005) that pooling developed and developing countries together as potential host country affects the estimation accuracy of FDI from developed countries in a review of a large number of empirical studies on FDI from developed countries since 1980s. Such empirical divide clearly calls for more theoretical development to provide systematic explanation on what explains such separate equilibriums in which the relationship between locational characteristics and FDI varies.

For BRIC MNCs, attaining relatively flexible labor practices will reduce transaction and production costs in the host country, especially in developed countries, which may be critical for them to set up a foundation for their operation in the location. But in the long term, they have to consider the development of appropriate labor practices that not only comply with local regulations but also are conductive to high productivity and creativity a priority in order to sustain their operations. From this point of view, lower standards may generate short-term cost efficiency, but not necessarily long-term success. Managers of BRIC MNCs have to decide what their long term investment aspirations are and make decisions accordingly.

From a theory point of view, our study suggests that the racing towards lower standards has its natural limits. The limits stem from the fact that corporate strategies tend to be affected by the organization's experience; so long as previous experience was not driven by the same force, it will interact with the current decision-making, bringing some disruptions to the race. The limits also stem from the nature of business operation, namely, to what extent the operation requires complementary input from the location. This provides an avenue for nation states to increase their bargaining position in attracting FDI if they can furnish their country with, other than natural resource, inputs and assets crucial for MNCs that cannot be easily sourced elsewhere, such as business and technology talents, and flexible but transparent business environment and infrastructure. We also find that despite the global competition for mobile capital, some developed countries still maintain high labor standards to provide workers with decent working conditions, wage, and job security. The maintenance of higher standards may serve as a filter for these

countries to repel capital flows that are not best suited to the country's history, traditions, or economic development. This could reduce the actual "loss" from jurisdictional competition, serving as a natural brake to the race to lower standards. We differentiate developed versus developing countries based on their significant economic and social differences. This is a top-down simplistic approach; future studies can model multiple equilibriums with a bottom-up approach to link corporations' investment motives with potentially multiple competitions among nation states.

We also find that integrating insights from different theoretical traditions has helped us generate a better understanding of the complexity of location decision of FDI. Future studies can also delve deeper on the implications of stringent labor regulations on employment contract costs in relative to product market transaction costs. Questions such as whether stringent labor market regulations unintentionally favour sub-contracting to FDI would be interesting to investigate to deepen our understanding of the firm's boundary. The unprecedented FDI has brought welfare improvement to a large population around the world, such as bringing new job opportunities and technologies to the host country as shown in the past regarding northern FDI, much more research is warranted to see if emerging market FDI contributes to the welfare of the host country in the same way, and to what extent labor as well as capital (MNCs) both share the propensity brought by increasing globalization of southern MNCs.

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Table 1: Variables and data sources

Variables	Measurement	Data sources	Min	Max
Dependent variable				
Choice	1= the country chosen; 0=otherwise	This study	0	1
Independent variables				
Employment protection laws	0-1; higher values indicate more rigid regulation/law system	Botero et al 2004	0.15	0.83
FACB rights	0-10; higher values indicate higher labor standards	Kucera 2004	0.00	10.00
Hiring and firing rigidity	1-7; higher values indicate higher labor standards	Global Competitiveness Report 2002-2009	1.60	6.00
Wage determination rigidity	1-7; higher values indicate higher labor standards	Global Competitiveness Report 2002-2009	2.10	6.80
Industry mobility	1-29 ranking; higher ranking indicates higher mobility	This study	1.00	29.00
Path dependency	Natural log of BRIC's export to the host country	Comtrade 2002-2009	0.02	8.53
Control variables				
Parent size	Natural log of MNC parent global turnover	This study	2.45	32.57
Parent R&D dummy	1=R&D intensive; 0=Otherwise	This study	0.00	1.00
GDP	Natural log of GDP	World Bank 2002-2009	0.13	25.48
Unemployment	Long term unemployment as % of total employment	World Bank 2002-2009	1.20	37.30
Compensation	Natural log of workers' remittances and compensation of employees, paid (current US$)	World Bank 2002-2009	12.45	24.61
Corporate Tax	Average tax rate paid by corporations	World Bank 2002-2009	9.30	293.30
Political stability	1-9; A composite index; higher values indicate higher stability	PRS group 2002-2009	0.00	9.04
Rule of law	-2.5-2.5. A composite index: higher values indicate better rule of law	World Bank 2009-2009	-2.34	2.13
Economic openness	(Export+import)/GDP	World Bank 2002-2009	0.01	26.17
BIT	1= if the pair of countries has bilateral investment treaties concluded; 0=Otherwise	UNCTAD 2002-2009	0.00	1.00
Distance	Natural log of air miles between the capital cities of the pair of countries	City distance calculator at www.geobytes.com	6.38	9.33

Table 2: Correlation matrix of key variables

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
1. Choice												
2. Employment protection laws	-0.0873											
3. FACB rights	-0.0078	0.2756										
4. Hiring and firing rigidity	-0.0705	0.2916	0.0869									
5. Wage determination rigidity	-0.0460	0.1662	0.2279	0.4154								
6. Mobility	0.3202	0.3453	-0.4933	0.0372	-0.2042							
7. Path dependence	1.0451	0.09322	0.0353	-0.0344	0.0456	-0.034						
8. Parent size	0.0022	0.0005	-0.0011	0.0013	-0.0000	0.4572	0.0345					
9. Parent R&D	0.0341	0.1471	-0.6093	-0.1458	-0.1589	0.3901	0.0234	0.0010				
10. GDP	0.0997	-0.0290	-0.3075	0.0502	0.1030	0.0342	0.3452	0.0018	0.6067			
11. Unemployment	0.0322	0.0341	0.0237	0.0348	0.0111	0.2941	0.0034	0.2191	0.0321	0.0212		
12. Compensation	-0.0214	0.0123	0.0345	0.0234	0.0123	0.4324	0.4532	0.2903	0.0293	0.0763	0.2372	
13. Tax	-0.0089	-0.0745	0.1976	-0.4283	-0.3028	0.0344	-0.0345	-0.0015	-0.0358	0.0696	0.0642	0.0346
14. Political risk	0.0982	0.0823	0.0292	0.0383	0.0212	0.3027	0.0932	0.2076	0.2238	0.0023	0.0236	0.0204
15.Rule of Law	-0.2321	0.03463	-0.1533	0.0578	0.0438	0.0253	0.0234	0.0432	0.2789	0.1425	0.0046	0.2348
16. BIT	0.0407	0.0650	0.1549	0.3658	-0.1194	0.2084	0.1156	0.0006	-0.2536	-0.2785	-0.3482	-0.0835
17. Openness	0.0745	0.3342	-0.3305	-0.0399	-0.0992	0.0934	0.3342	-0.0007	0.0816	-0.4239	-0.3324	0.2450
18. Distance	0.0389	0.2193	-0.5885	0.2612	-0.1881	0.0341	0.0234	0.0022	0.2766	0.2303	-0.3994	-0.0450
	(13)	*(14)*	*(15)*	*(16)*	*(17)*							
13. Tax												
14. Political risk	0.0219											
15.Rule of Law	0.0053	0.3701										
16. BITs	-0.0385	0.0435	0.0324									
17. Openness	0.1324	0.0632	0.0367	0.1754								
18. Distance	0.0166	0.0148	0.02345	0.1027	0.0464							

Table 3: The determinants of location choices of BRIC FDI: mixed conditional logistic regressions

Independent variables	Model 1	Model 2	Model 3	Model 4
Employment Protection Laws	-0.682***			
	(0.016)			
FACB rights		-0.055***		
		(0.008)		
Hiring and Firing rigidity			-0.035**	
			(0.006)	
Wage determination rigidity				-0.037**
				(0.006)
Size	0.008	0.040	0.084	0.039
	(0.066)	(0.184)	(0.054)	(0.237)
R&D	0.075	0.079	0.065	0.055
	(0.502)	(0.522)	(0.502)	(0.412)
GDP	0.605***	0.564***	0.578***	0.578***
	(0.032)	(0.037)	(0.029)	(0.029)
Unemployment	0.004*	0.005*	0.004*	0.005*
	(0.000)	(0.000)	(0.000)	(0.000)
Compensation	-0.080***	-0.091***	-0.081***	-0.081***
	(0.004)	(0.005)	(0.003)	(0.003)
Tax	-0.002	-0.000*	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)
Political Stability	0.029	0.552	-0.150	-0.001
	(0.121)	(0.174)	(0.115)	(0.117)
Rule of Law	-0.153**	-0.043**	-0.211***	-0.218***
	(0.053)	(0.060)	(0.053)	(0.052)
BITs	0.305***	0.220***	0.202***	0.203***
	(0.058)	(0.056)	(0.057)	(0.056)
Openness	0.495***	0.547***	0.451***	0.453***
	(0.048)	(0.114)	(0.048)	(0.047)
Distance	0.285***	0.262***	0.141*	0.144*
	(0.062)	(0.059)	(0.062)	(0.061)
Number of observations	83141	87674	88481	88481
Simulated Log-L MXL	-1539.2	-1543.7	-1558.4	-1559.2

Note: The dependent variable is equal to 1 if firm *i* is set in a country *j* and zero for all others different from *j*. Asterisks denote confidence levels*:* * p<0.05, ** p<0.01, *** p<0.001, clustered standard errors in parentheses. In each regression, the error component includes all the dependent variables used also as location determinants, as well as region dummies. We do not report component results due to space constraints.

Table 4: The determinants of location choices of BRIC FDI in developed versus developing countries

	Developed countries				Developing countries			
Independent variables	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Employment Protection Laws	-1.212***				0.746			
	(0.339)				(0.672)			
FACB rights		-0.169***				0.008		
		(0.037)				(0.026)		
Hiring and Firing rigidity			-0.133**				0.027	
			(0.055)				(0.066)	
Wage determination rigidity				-0.101*				0.380**
				(0.052)				(0.073)
Size	0.019	0.018	0.021	0.019	-0.219	-0.218	-0.211	-0.211
	(0.071)	(0.070)	(0.072)	(0.071)	(0.313)	(0.312)	(0.321)	(0.310)
R&D	1.074*	1.089*	1.077*	1.071*	-4.585	-4.586	-4.588	-4.501
	(0.546)	(0.556)	(0.557)	(0.559)	(3.016)	(3.024)	(3.016)	(2.556)
GDP	0.930***	0.834***	0.899***	0.861***	0.331***	0.330***	0.327***	0.352***
	(0.069)	(0.063)	(0.062)	(0.063)	(0.041)	(0.055)	(0.036)	(0.035)
Unemployment	0.055*	0.111***	0.005	0.056*	0.018	0.006	0.009	-0.020
	(0.026)	(0.025)	(0.023)	(0.023)	(0.013)	(0.011)	(0.012)	(0.012)
Compensation	-0.096**	-0.095**	-0.094**	-0.098**	0.044	0.085**	0.074**	0.059*
	(0.049)	(0.046)	(0.048)	(0.047)	(0.031)	(0.032)	(0.029)	(0.027)
Tax	-0.025***	-0.017***	-0.030***	-0.020***	0.016***	0.008**	0.009**	0.003
	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)
Political Stability	-0.132*	-0.119**	-0.171**	-0.168**	-0.003	0.038	0.068	0.171
	(0.064)	(0.071)	(0.061)	(0.061)	(0.102)	(0.117)	(0.100)	(0.099)
Rule of Law	-0.321***	-0.284***	-0.274***	-0.277***	-0.092	-0.067	-0.074	-0.055
	(0.031)	(0.032)	(0.030)	(0.029)	(0.063)	(0.054)	(0.050)	(0.053)
BITs	0.444***	0.382***	0.319***	0.411***	-0.104	0.035	-0.006	0.059
	(0.079)	(0.076)	(0.079)	(0.077)	(0.110)	(0.107)	(0.104)	(0.104)
Openness	0.593**	0.599***	0.647***	0.711***	0.835***	0.428*	0.450***	0.512***
	(0.182)	(0.174)	(0.181)	(0.178)	(0.133)	(0.195)	(0.100)	(0.098)
Distance	0.452***	0.467***	0.458***	0.266*	0.172	-0.027	-0.001	-0.073
	(0.120)	(0.104)	(0.126)	(0.122)	(0.128)	(0.097)	(0.093)	(0.094)
Number of Observations	30946	30946	30946	30946	32786	32337	32337	32337
Simulated Log-L MXL	-789.4	-745.6	-775.8	-781.3	-586.3	-576.7	-556.7	-558.6

Note: The dependent variable is equal to 1 if firm *i* is set in a country *j* and zero for all others different from *j*. Asterisks denote confidence levels*:* * p<0.05, ** p<0.01, *** p<0.001, clustered standard errors in parentheses. In each regression, the error component includes all the dependent variables used also as location determinants, as well as region dummies. We do not report component results due to space constraints.

Table 5: The determinants of location choices of BRIC FDI in three industries

	Primary				Manufacturing				Service			
Independent variables	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Employment Protection Laws	0.300				-0.381				-1.800*			
	(1.508)				(0.824)				(0.809)			
FACB rights		0.039				-0.025				-0.152**		
		(0.052)				(0.041)				(0.037)		
Hiring and Firing rigidity			0.027				-0.031				-0.104**	
			(0.532)				(0.045)				(0.034)	
Wage determination rigidity				0.025				-0.039				-0.134**
				(0.324)				(0.038)				(0.035)
Size	-0.159	-0.120	0.0134	0.0123	0.120	0.056	0.056	0.056	-0.049	-0.135*	-0.135*	-0.135*
	(0.172)	(0.073)	(0.086)	(0.087)	(0.108)	(0.062)	(0.062)	(0.062)	(0.102)	(0.058)	(0.058)	(0.058)
R&D	-1.895	-1.931	-1.903	-1.902	-1.612	-1.706	-1.706	-1.706	1.899**	1.767*	1.767*	1.767*
	(1.791)	(1.818)	(1.864)	(1.862)	(0.881)	(0.898)	(0.898)	(0.898)	(0.701)	(0.718)	(0.718)	(0.718)
GDP	0.492***	0.497***	0.499***	0.495***	0.781***	0.803***	0.803***	0.803***	0.727***	0.587***	0.587***	0.587***
	(0.083)	(0.093)	(0.091)	(0.092)	(0.068)	(0.077)	(0.077)	(0.077)	(0.056)	(0.068)	(0.068)	(0.068)
Unemployment	0.089**	0.097***	0.103***	0.103***	0.003	0.002	0.002	0.002	0.033	0.041*	0.041*	0.041*
	(0.028)	(0.029)	(0.031)	(0.032)	(0.022)	(0.022)	(0.022)	(0.022)	(0.020)	(0.020)	(0.020)	(0.020)
Compensation	-0.642***	-0.553**	-0.555***	-0.554***	-0.536***	-0.584***	-0.584***	-0.584***	-0.702***	-0.311*	-0.311*	-0.311*
	(0.149)	(0.187)	(0.188)	(0.188)	(0.118)	(0.152)	(0.152)	(0.152)	(0.107)	(0.140)	(0.140)	(0.140)
Tax	-0.001	-0.001	-0.002	-0.002	-0.007	-0.007	-0.007	-0.007	-0.010*	-0.007	-0.007	-0.007
	(0.006)	(0.006)	(0.006)	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Political Stability	-0.052	-0.057	0.023	0.031	-0.295*	-0.324*	-0.324*	-0.324*	0.074	0.160	0.160	0.160
	(0.186)	(0.190)	(0.134)	(0.138)	(0.148)	(0.147)	(0.147)	(0.147)	(0.137)	(0.148)	(0.148)	(0.148)
Rule of Law	-0.064	-0.066	-0.049	-0.051	-0.064*	-0.055*	-0.061*	-0.062*	0.032	0.032	0.032	0.032
	(0.122)	(0.124)	(0.121)	(0.122)	(0.012)	(0.012)	(0.12)	(0.014)	(0.432)	(0.432)	(0.432)	(0.432)
BITs	-0.057	-0.075	-0.077	-0.076	0.191	0.190	0.197	0.196	0.189**	0.148**	0.189**	0.148**
	(0.172)	(0.171)	(0.167)	(0.169)	(0.138)	(0.139)	(0.138)	(0.139)	(0.016)	(0.013)	(0.015)	(0.013)
Openness	0.134	0.392*	0.421*	0.420*	0.619***	0.628***	0.619***	0.628***	0.554***	0.570***	0.554***	0.570***
	(0.177)	(0.187)	(0.192)	(0.189)	(0.116)	(0.139)	(0.116)	(0.139)	(0.090)	(0.110)	(0.090)	(0.110)
Distance	-0.154	-0.130	-0.130	-0.132	0.252**	0.227**	0.252**	0.227**	0.098	0.203	0.098	0.203
	(0.195)	(0.198)	(0.195)	(0.195)	(0.046)	(0.050)	(0.046)	(0.050)	(0.136)	(0.138)	(0.136)	(0.138)
Number of Observations	9323	9323	9323	9323	15303	15303	15303	15303	20540	20540	20540	20540
Simulated Log-L MXL	-160.47	-162.45	-166.43	-161.34	-312.30	-323.56	-324.32	-326.21	-342.33	-341.23	-375.23	-364.32

Note: The dependent variable is equal to 1 if firm *i* is set in a country *j* and zero for all others different from *j*. Asterisks denote confidence levels*:* * p<0.05, ** p<0.01, *** p<0.001, clustered standard errors in parentheses. In each regression, the error component includes all the dependent variables used also as location determinants, as well as region dummies. We do not report component results due to space constraints.

Table 6: The determinants of location choices of BRIC FDI: the effect of mobility

Independent variables	Model 1	Model 2	Model 3	Model 4
Mobility	0.464***	0.453***	0.465***	0.461***
	(0.075)	(0.066)	(0.075)	(0.072)
Employment Protection Laws	-0.675***			
	(0.021)			
Mobility *Employment Protection Laws	-1.038***			
	(0.214)			
FACB rights		-0.058***		
		(0.016)		
Mobility* FACB rights		-0.104***		
		(0.015)		
Hiring and Firing rigidity			-0.031**	
			(0.004)	
Mobility*Hiring and Firing rigidity			-0.085**	
			(0.009)	
Wage determination rigidity				-0.042**
				(0.005)
Mobility* Wage determination rigidity				-0.102**
				(0.035)
Size	0.034	0.039	0.047	0.038
	(0.054)	(0.059)	(0.058)	(0.059)
R&D	0.065	0.067	0.069	0.062
	(0.502)	(0.531)	(0.521)	(0.522)
GDP	0.578***	0.603***	0.623***	0.632***
	(0.029)	(0.030)	(0.029)	(0.031)
Unemployment	0.004*	0.0043	0.003*	0.002*
	(0.000)	(0.000)	(0.000)	(0.000)
Compensation	-0.083***	-0.089***	-0.083***	-0.093***
	(0.003)	(0.005)	(0.008)	(0.011)
Tax	-0.001	-0.001	-0.002	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)
Political Stability	-0.150	-0.153	-0.157	-0.159
	(0.115)	(0.117)	(0.119)	(0.116)
Rule of Law	-0.211***	-0.038***	-0.107***	-0.199***
	(0.053)	(0.036)	(0.051)	(0.057)
BITs	0.202***	0.312***	0.223**	0.193***
	(0.057)	(0.058)	(0.044)	(0.050)
Openness	0.496***	0.553***	0.493***	0.445***
	(0.056)	(0.052)	(0.051)	(0.040)
Distance	0.122*	0.105*	0.133*	0.146*
	(0.060)	(0.060)	(0.061)	(0.063)
Number of Observations	58448	58448	58448	58448
Simulated Log-L MXL	-1168.9	-1136.4	-1138.9	-1137.5

Note: The dependent variable is equal to 1 if firm *i* is set in a country *j* and zero for all others different from *j*. Asterisks denote confidence levels: * p<0.05, ** p<0.01, *** p<0.001, clustered standard errors in parentheses. In each regression, the error component includes all the dependent variables used also as location determinants, as well as region dummies. We do not report component results due to space constraints.

Table 7: The determinants of location choices of BRIC FDI: the effect of path dependency

Independent variables	Model 1	Model 2	Model 3	Model 4
Path dependency	1.089***	1.398***	1.345***	1.341***
	(0.034)	(0.035)	(0.031)	(0.034)
Employment Protection Laws	-0.570***			
	(0.011)			
Path dependency* Employment Protection Laws	0.036***			
	(0.002)			
FACB rights		-0.049***		
		(0.010)		
Path dependency* FACB rights		0.021***		
		(0.006)		
Hiring and Firing rigidity			-0.034***	
			(0.005)	
Path dependency* Hiring and Firing rigidity			0.028***	
			(0.007)	
Wage determination rigidity				-0.048***
				(0.006)
Path dependency* Wage determination rigidity				0.065***
				(0.009)
Size	0.084	0.094	0.091	0.084
	(0.054)	(0.058)	(0.050)	(0.055)
R&D	0.065	0.098	0.097	0.085
	(0.502)	(0.532)	(0.811)	(0.543)
GDP	0.578***	0.601***	0.634***	0.593***
	(0.029)	(0.031)	(0.029)	(0.032)
Unemployment	0.004*	0.002*	0.002*	0.002*
	(0.000)	(0.000)	(0.000)	(0.000)
Compensation	-0.081***	-0.080***	-0.085***	-0.086***
	(0.003)	(0.005)	(0.007)	(0.007)
Tax	-0.001	-0.005	-0.004	-0.003
	(0.002)	(0.003)	(0.004)	(0.011)
Political Stability	-0.150	-0.161	-0.157	-0.156
	(0.115)	(0.115)	(0.117)	(0.118)
Rule of Law	-0.211***	-0.201***	-0.203***	-0.191***
	(0.053)	(0.051)	(0.052)	(0.050)
BITs	0.202***	0.204***	0.228***	0.216***
	(0.057)	(0.059)	(0.061)	(0.0647)
Openness	0.451***	0.445***	0.443***	0.454***
	(0.048)	(0.043)	(0.044)	(0.049)
Distance	0.141*	0.145*	0.150*	0.146*
	(0.062)	(0.063)	(0.060)	(0.061)
Number of Observations	70844	70844	70844	70844
Simulated Log-L MXL	-1288.07	-1268.43	-1268.54	-1289.54

Note: The dependent variable is equal to 1 if firm *i* is set in a country *j* and zero for all others different from *j*. Asterisks denote confidence levels: * p<0.05, ** p<0.01, *** p<0.001, clustered standard errors in parentheses. In each regression, the error component includes all the dependent variables used also as location determinants, as well as region dummies. We do not report component results due to space constraints.

Appendix 1: Three sectors and the ranking of capital mobility

Primary	Mobility rank	Manufacturing	Mobility rank	Services	Mobility rank
Beverages	28	Aerospace	20	Business Services	NA
Coal, Oil and Natural Gas	29	Alternative/Renewable energy	2	Communications	NA
		Automotive Components	10	Financial Services	NA
Food & Tobacco	26	Automotive OEM	9	Healthcare	NA
Metals	25	Biotechnology	5	Hotels & Tourism	NA
Minerals	23	Building & Construction Materials	11	Leisure & Entertainment	NA
Paper, Printing & Packaging	17	Business Machines & Equipment	6		NA
		Ceramics & Glass	24	Real Estate	NA
Rubber	21	Chemicals	19	Software & IT services	NA
Wood Products	16	Consumer Electronics	1		
		Consumer Electrical Products	3	Transportation	NA
		Electronic Components	7	Warehousing & Storage	NA
		Engines & Turbines	12		
		Industrial Machinery, Equipment & Tools	13		
		Medical Devices	14		
		Non-Automotive Transport OEM	22		
		Pharmaceuticals	18		
		Plastics	4		
		Semiconductors	8		
		Space & Defense	NA		
		Textiles	27		

Appendix 2: Destination country distribution across developed and developing countries

	Number of FDI			Number of FDI	
Destination Country	Developing country	Developed Country	Destination Country	Developing country	Developed Country
Afghanistan	7	0	Luxembourg	0	3
Algeria	12	0	Macau	5	0
Angola	21	0	Macedonia	6	0
Argentina	64	0	Madagascar	3	0
Armenia	38	0	Malawi	1	0
Australia	0	87	Malaysia	84	0
Austria	0	12	Maldives	2	0
Azerbaijan	37	0	Malta	1	0
Bahrain	32	0	Mauritania	1	0
Bangladesh	27	0	Mauritius	18	0
Belarus	59	0	Mexico	0	73
Belgium	0	32	Micronesia	1	0
Bermuda	1	0	Moldova	8	0
Bhutan	5	0	Mongolia	11	0
Bolivia	8	0	Montenegro	3	0
Bosnia &	7	0	Morocco	9	0
Botswana	7	0	Mozambique	8	0
Brazil	82	0	Namibia	5	0
Brunei	2	0	Nepal	7	0
Bulgaria	29	0	Netherlands	0	54
Burma (Myanmar)	6	0	New Caledonia	1	0
Burundi	1	0	New Zealand	0	12
Cambodia	7	0	Nicaragua	2	0
Cameroon	2	0	Niger	3	0
Canada	0	61	Nigeria	39	0
Cayman Islands	3	0	North Korea	5	0
Chad	2	0	Norway	0	5
Chile	0	22	Oman	48	0
China	244	0	Pakistan	30	0
Colombia	42	0	Panama	5	0
Congo (DRC)	8	0	Papua New	3	0
Costa Rica	4	0	Paraguay	3	0
Croatia	5	0	Peru	37	0
Cuba	10	0	Philippines	54	0
Cyprus	12	0	Poland	0	38
Czech Republic	0	28	Portugal	0	20
Denmark	0	16	Puerto Rico	2	0
Dominican Republic	2	0	Qatar	26	0
Ecuador	10	0	Romania	39	0
Egypt	49	0	Russia	109	0
El Salvador	2	0	Rwanda	4	0
Estonia	0	15	Saudi Arabia	52	0
Ethiopia	15	0	Senegal	3	0
Fiji	1	0	Serbia	15	0
Finland	0	7	Seychelles	2	0

France	0	80	Sierra Leone	1	0
Gabon	2	0	Singapore	129	0
Gambia	1	0	Slovakia	0	12
Georgia	21	0	Slovenia	0	3
Germany	0	238	South Africa	69	0
Ghana	9	0	South Korea	0	29
Greece	0	10	Spain	0	53
Guatemala	2	0	Sri Lanka	37	0
Guinea	1	0	Sudan	7	0
Guyana	1	0	Suriname	1	0
Honduras	2	0	Sweden	0	26
Hong Kong	128	0	Switzerland	0	36
Hungary	0	25	Syria	14	0
Iceland	0	1	Taiwan	47	0
India	125	0	Tajikistan	16	0
Indonesia	75	0	Tanzania	12	0
Iran	31	0	Thailand	62	0
Iraq	6	0	Trinidad &	3	0
Ireland	0	11	Tunisia	1	0
Israel	0	10	Turkey	0	38
Italy	0	40	Turkmenistan	21	0
Japan	0	75	UAE	248	0
Jordan	15	0	UK	0	310
Kazakhstan	71	0	Uganda	9	0
Kenya	23	0	Ukraine	143	0
Kuwait	12	0	United States	0	389
Kyrgyzstan	6	0	Uruguay	17	0
Laos	6	0	Uzbekistan	47	0
Latvia	25	0	Venezuela	36	0
Lebanon	1	0	Vietnam	116	0
Liberia	2	0	Yemen	7	0
Libya	9	0	Zambia	21	0
Lithuania	23	0	Zimbabwe	7	0